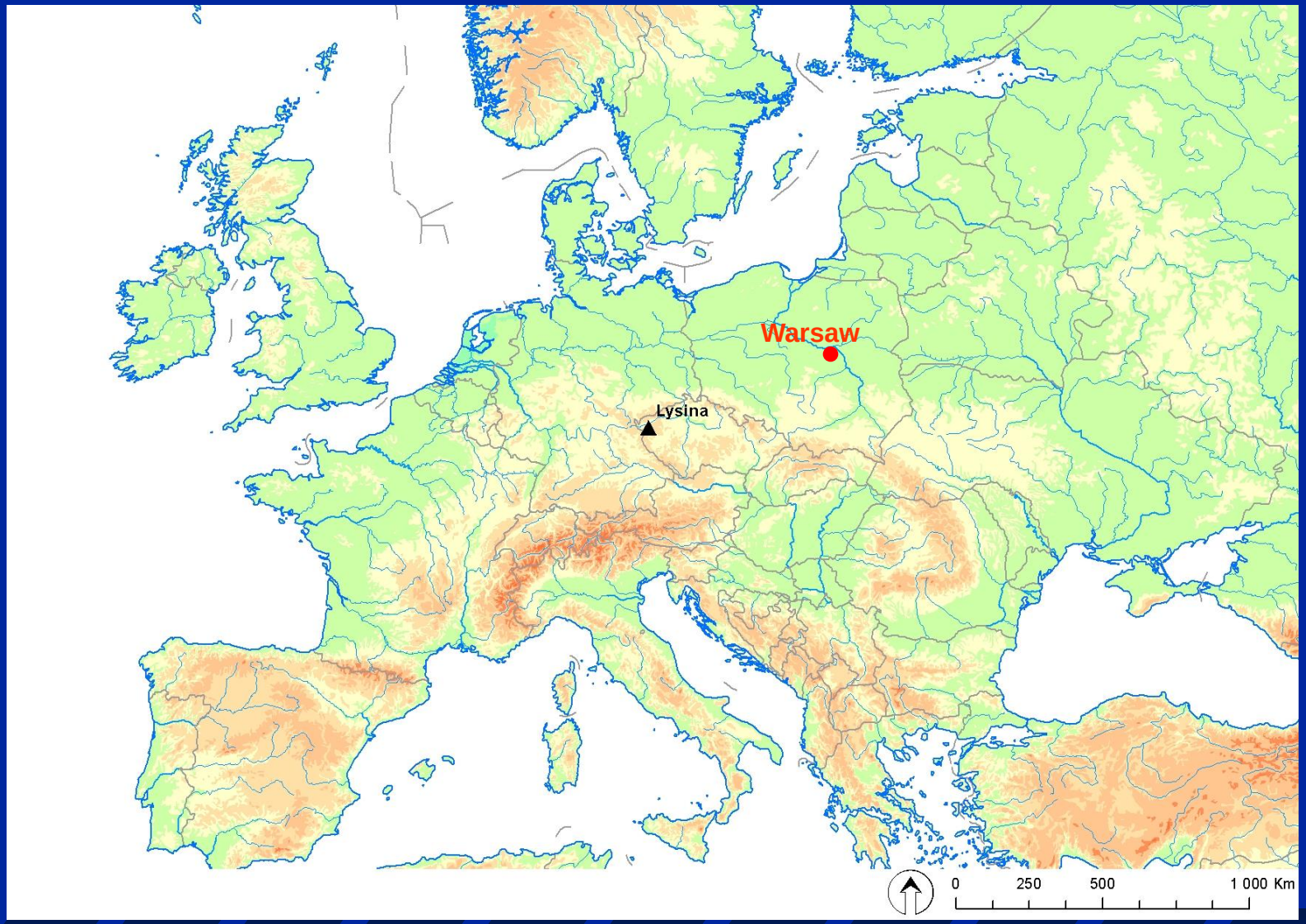
Nitrogen and Phosphorus at Lysina CZ02

Pavel Krám, Oldřich Myška,
Jan Čuřík, František Veselovský
and Jakub Hruška

Czech Geological Survey, Prague, Czech Republic

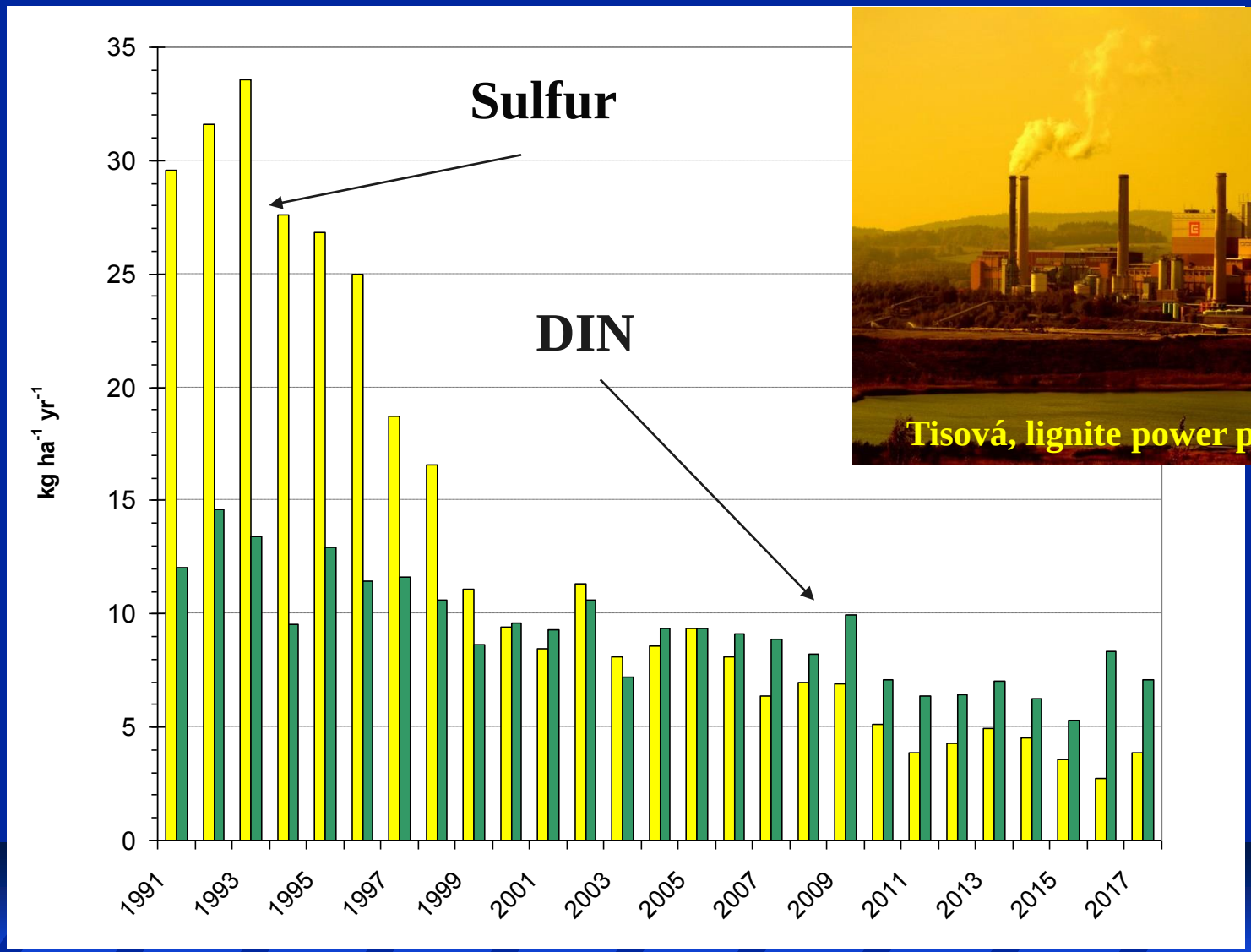
Location of the Lysina catchment (CZ02 in the ICP IM network)



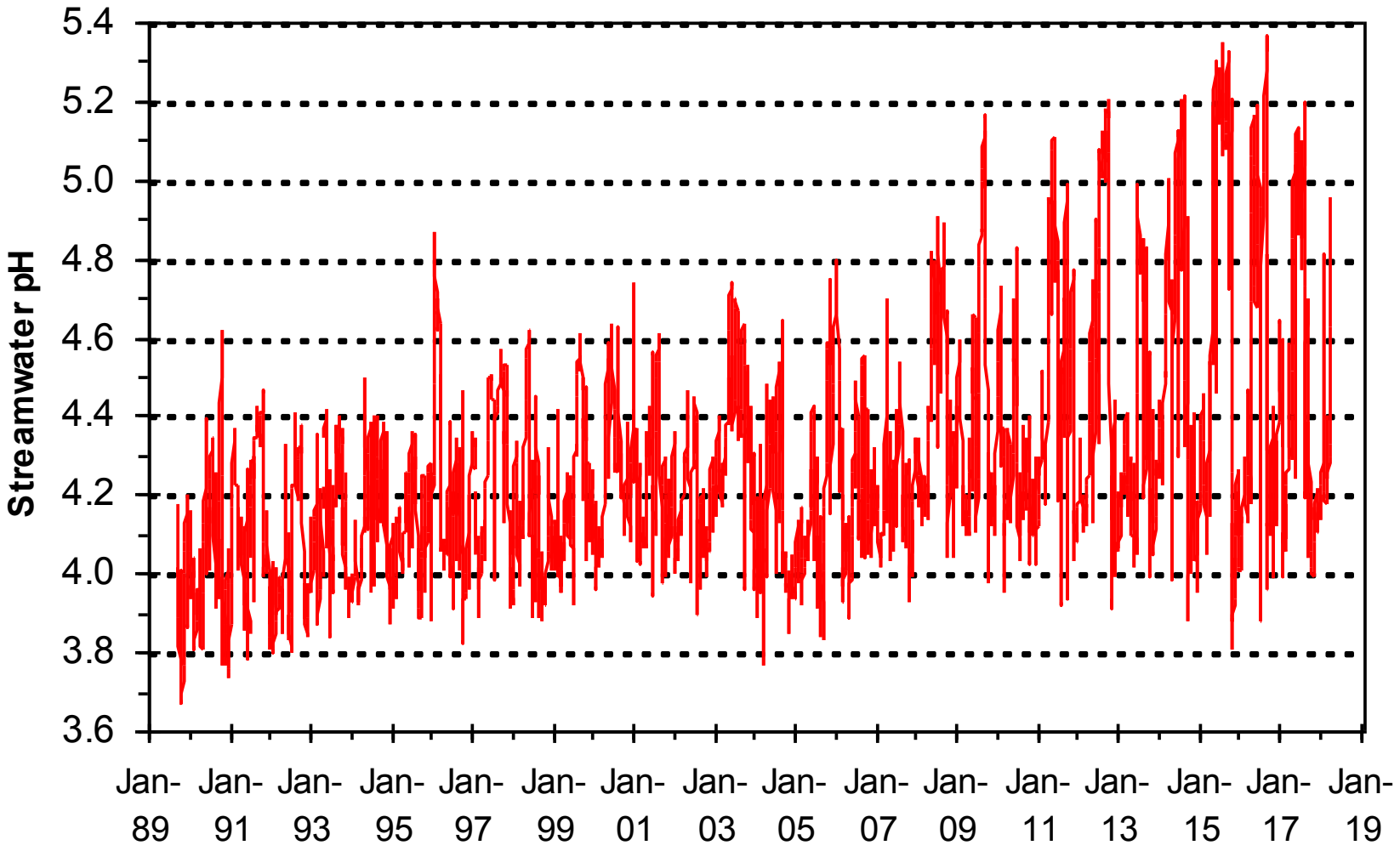
Lysina catchment, 0.27 km^2, 829-949 m a.s.l., (leuco)granite, Podzol, spruce research 1988-2018, regular input-output monitoring since 1991

V-notch weir at Lysina during a high flow episode, characterized by brown color due to high concentration of dissolved organic carbon (DOC) generated in shallow water flow paths of forest soils.

Annual Fluxes of Atmospheric Deposition of Sulfur and Inorganic Nitrogen at Lysina in 1991-2017



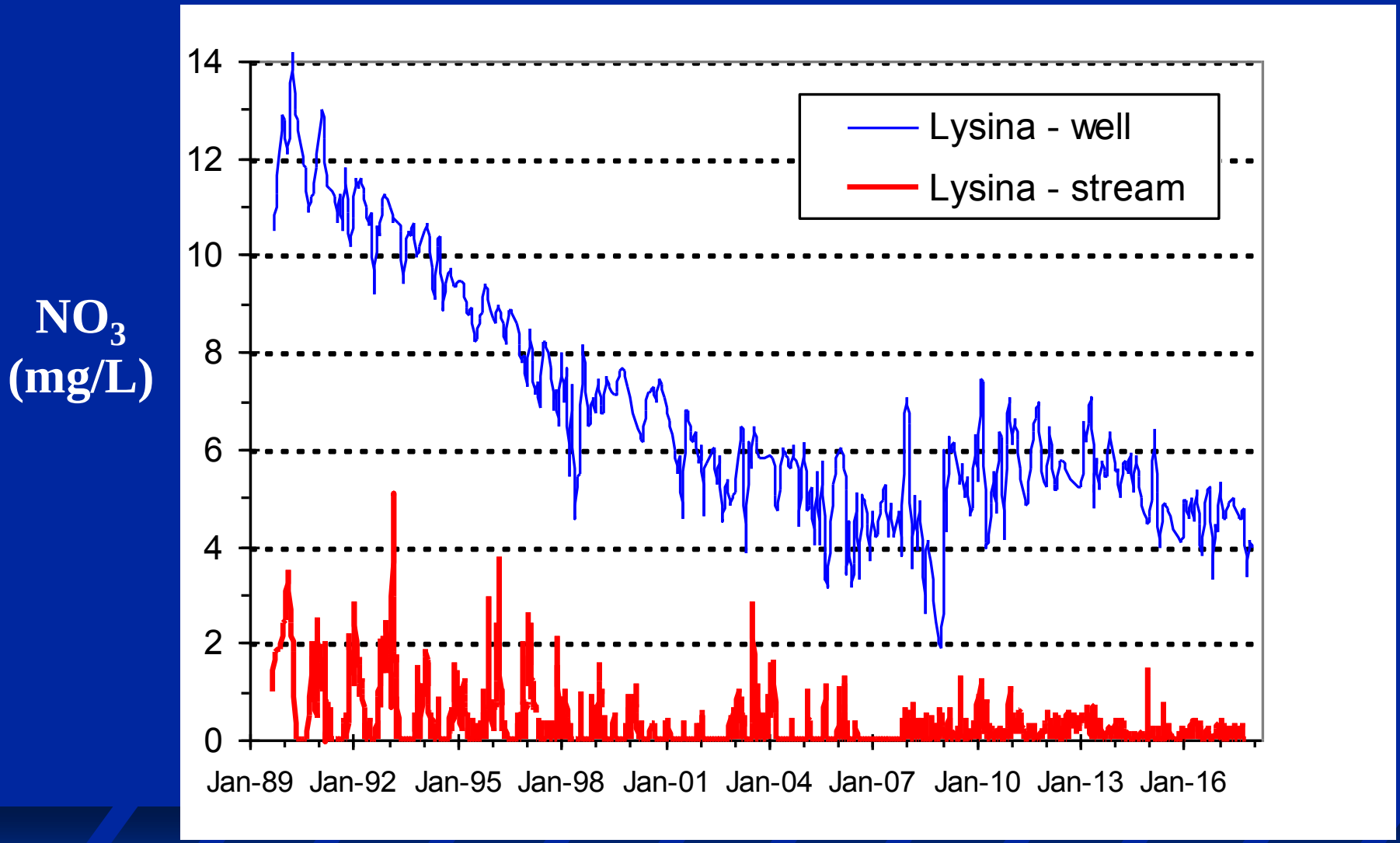
Weekly Streamwater pH at Lysina (Sep 1989 – May 2018)



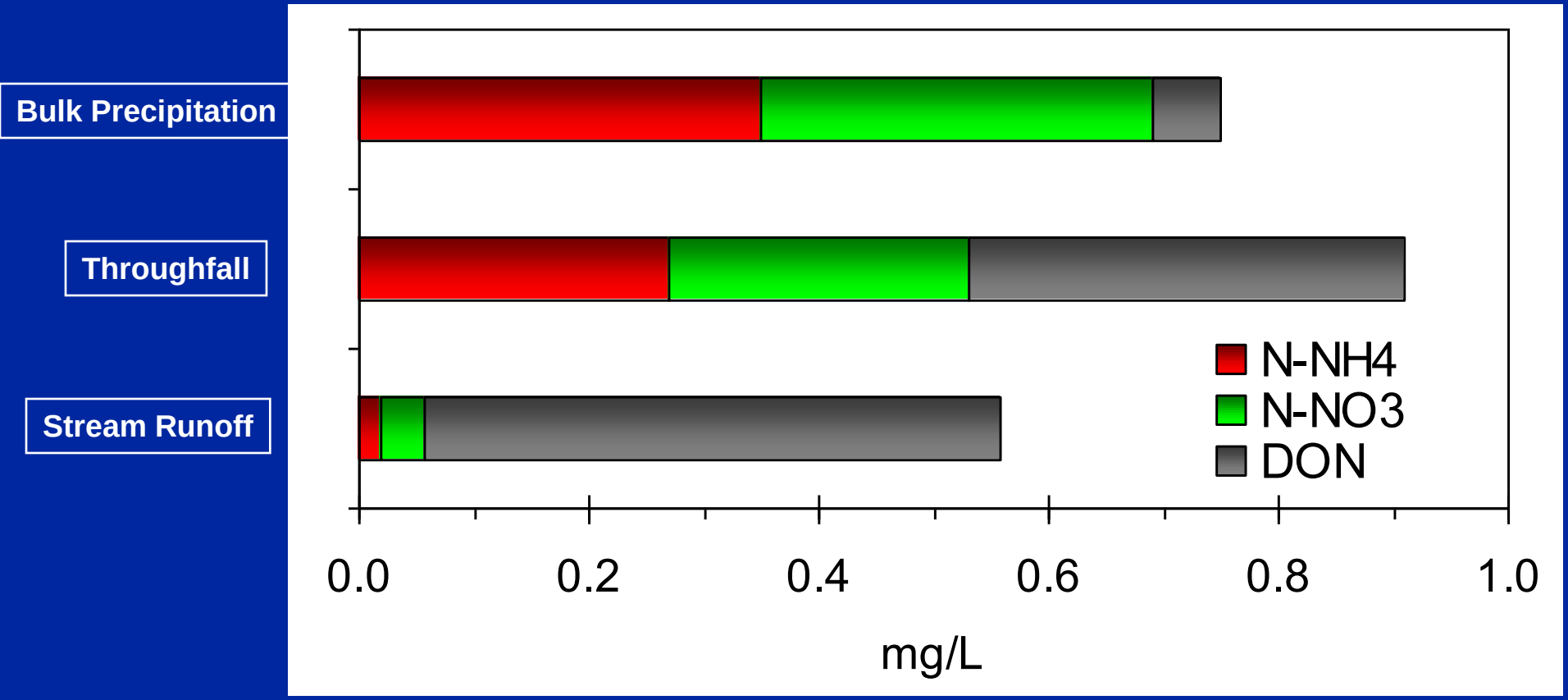
Note 1: Low pH values at Lysina are generally detected during high flow periods, high pH values during low flow periods.

Note 2: The size matters! Streamwater pH values are usually higher downstream (with sampling of higher catchment area). As a consequence also pH values downstream from the Lysina point (area 0.27 km^2) to the catchment size recommended e.g. by the Water Framework Directive (>10 km^2) will be higher due to longer water residence time in the catchment and longer time for chemical weathering processes!

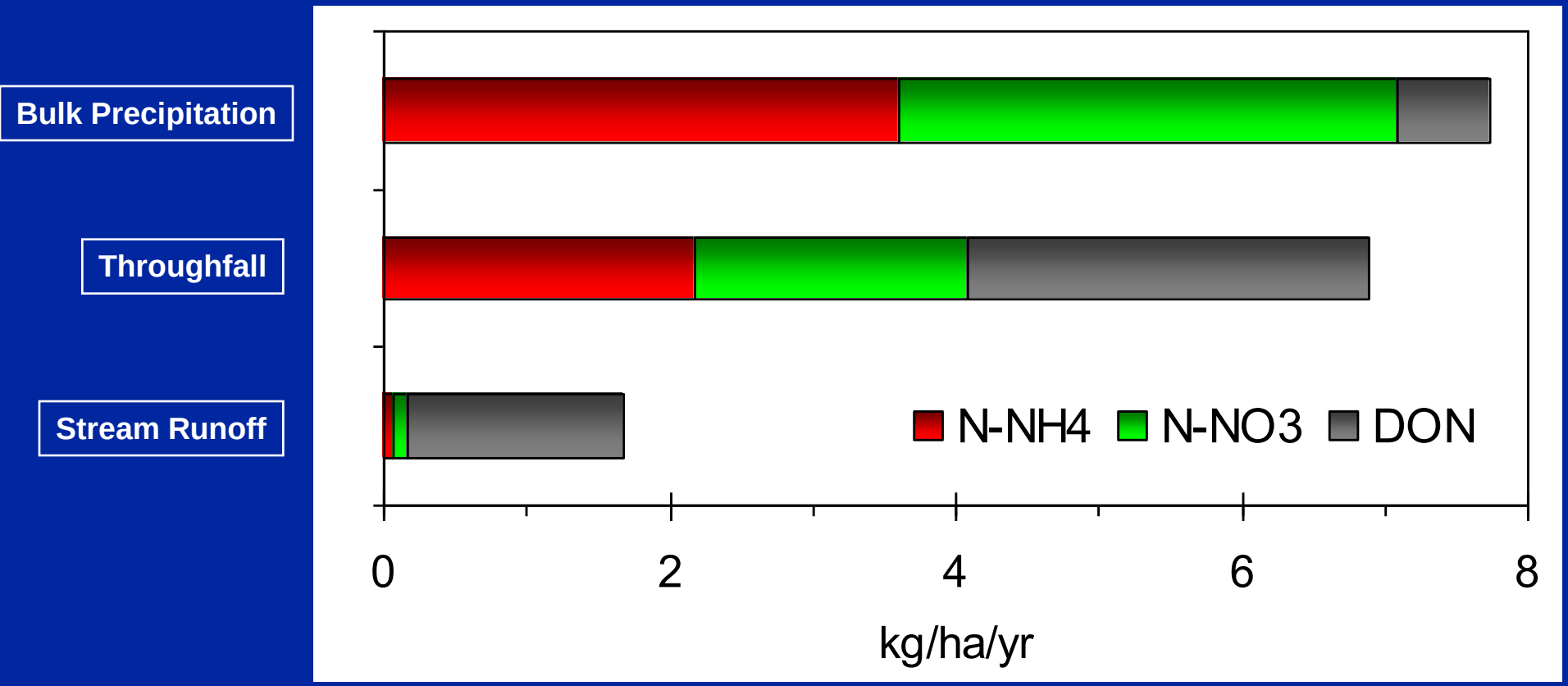
Nitrate in Groundwater and Streamwater at Lysina (Sep 1989 – Dec 2017)



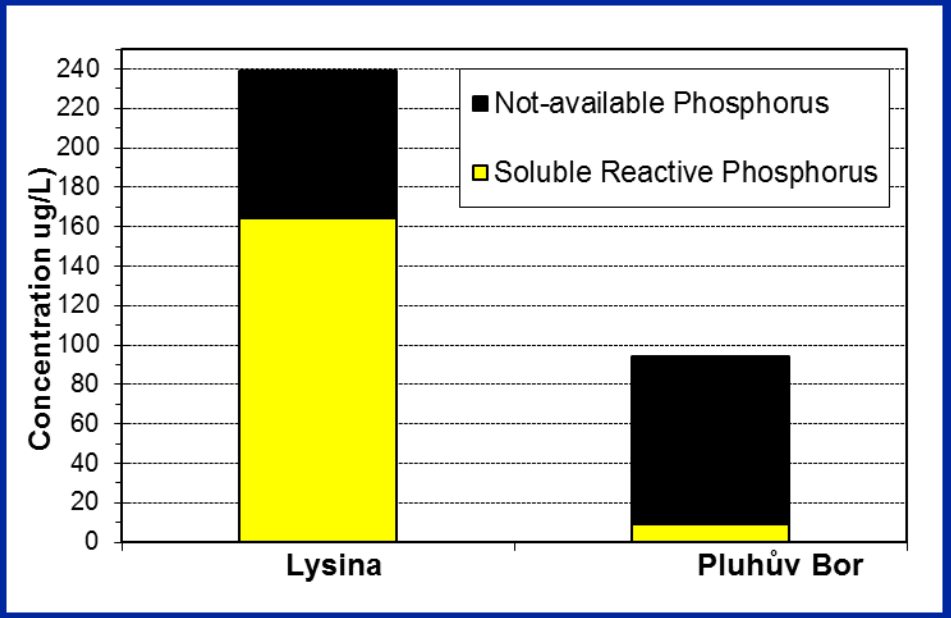
Nitrogen Concentrations at Lysina in 2017 Water Year



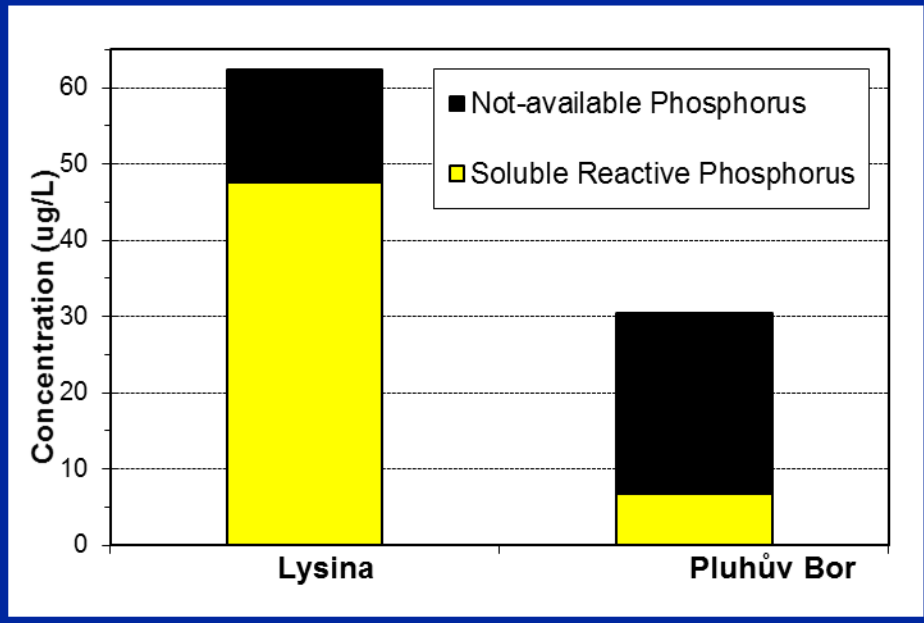
Nitrogen Fluxes at Lysina in 2017 Water Year



Medians of Phosphorus Concentrations in Drainage Waters at Two Geochemically Contrasting Catchments in 2017 Water Year

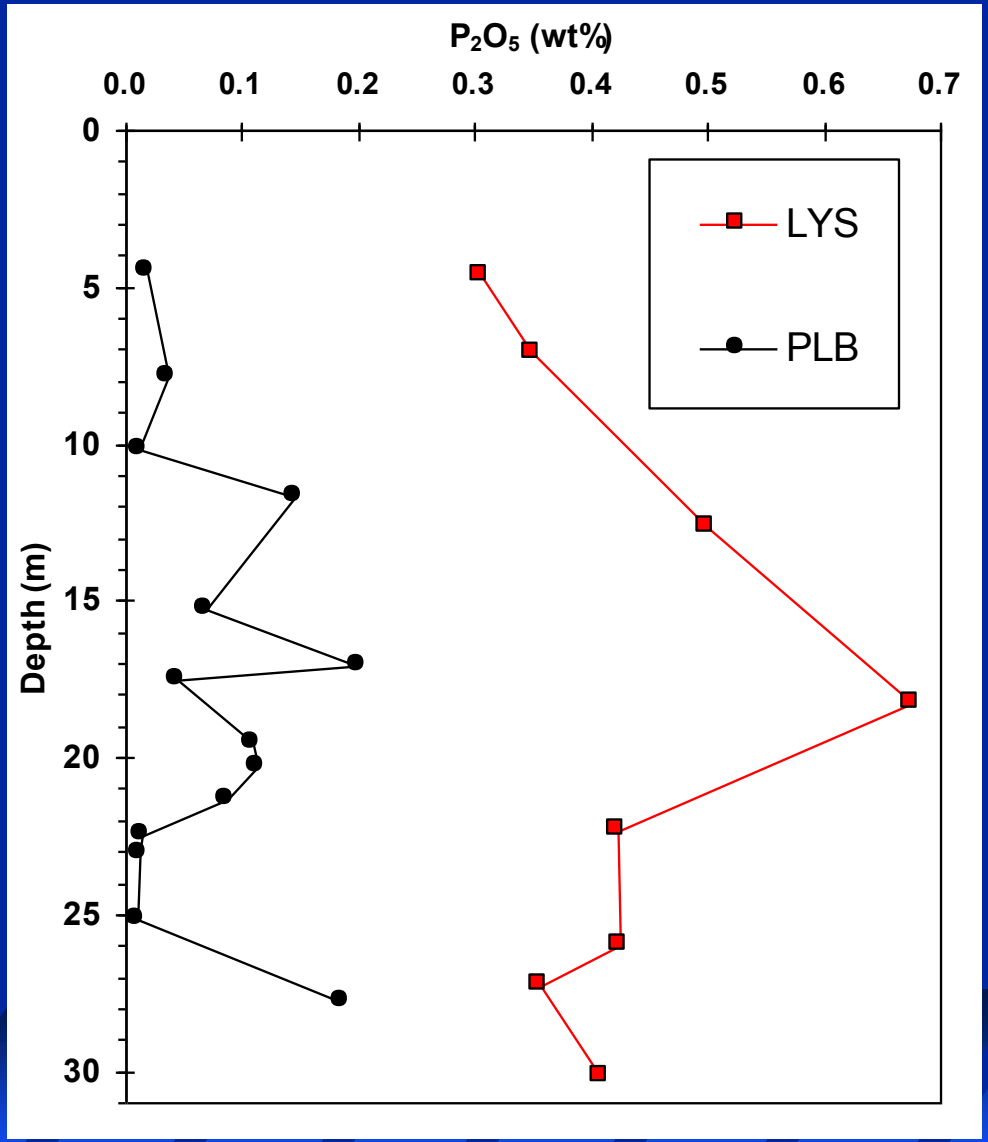


Soil Water



Stream Water

Rock Concentrations of Phosphorus in Borehole Cores at Granitic Lysina and Ultrabasic Pluhův Bor

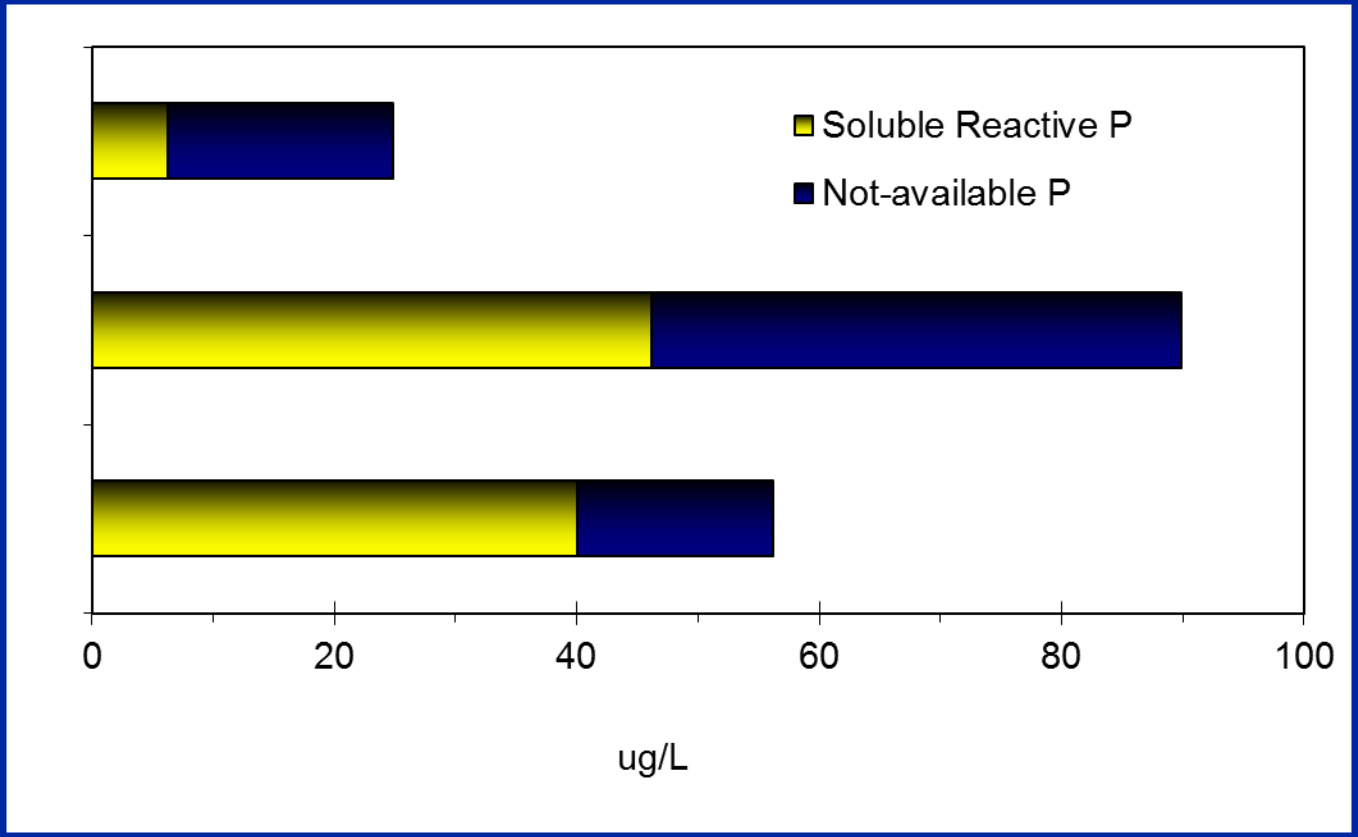


Phosphorus concentrations at Lysina in 2017 Water Year

Bulk Precipitation

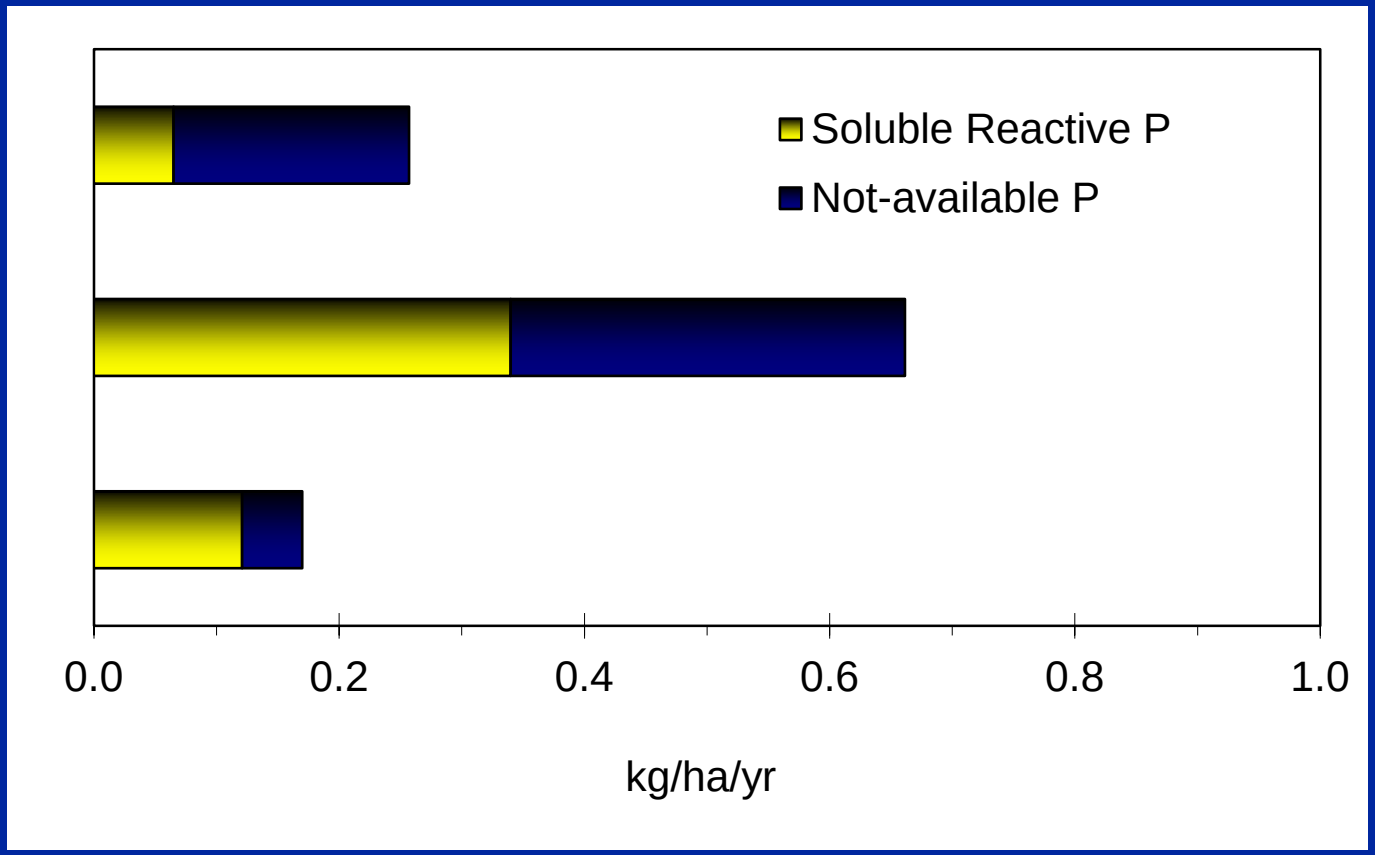
Throughfall

Stream Runoff



Info about competition of acidification and phosphorus eutrofization and its influence on benthic algae: Schneider S.C., Oulehle F., Krám P., Hruška J. 2018. Hydrobiologia 805: 33-47.

Phosphorus fluxes at Lysina in 2017 Water Year



Monitoring subprograms of the ICP-IM network in 2017

Meteorology	**Groundwater chemistry**	**Vegetation (plot scale)**
Air chemistry *(incl. CO_2)*	**Runoff water chemistry**	**Bioelements**
Precipitation chemistry	**Lake water chemistry**	**Vegetation structure**
Moss chemistry	**Foliage chemistry**	**Trunk epiphytes**
Throughfall chemistry	**Litterfall chemistry**	**Aerial green algae**
Stemflow chemistry	**Hydrobiology of streams**	**Microbial decomposition *(incl. CO_2)***
Soil chemistry	**Hydrobiology of lakes**	**Bird inventory**
Soil water chemistry	**Forest damage**	**Vegetation inventory**
Data-rich catchments (amount of reported subprograms):		
21: LV02 (Zoseni); **20:** EE02 (Saarejärve); **19:** DE01 (Forellenbach) and FI01 (Valkea-Kotinen); **18:** SE04, FI03, LT01, LT03 and LV01; **17:** FI04, SE14, SE15 and CZ02 (Lysina)		

Note 1: No Rock chemistry subprogram in the ICP IM !

Note 2: Data-rich Latvian catchments (LV) were unfortunately removed from the IM because the data submission lasted only until 2009!

Conclusions

- Total dissolved nitrogen budget at Lysina is incomplete without considering the Dissolved Organic Nitrogen (DON), especially for the runoff
- Relatively high concentrations and fluxes of phosphorus in drainage waters at Lysina were generated by elevated content of phosphorus in granitic bedrock. Soluble Reactive Phosphorus (SRP) fraction available for biota prevailed at Lysina.